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Snap-in air bag module

An air bag module is usually secured in a vehicle steering wheel using conventional fasteners such as nuts and bolts. This disclosure is directed to a snap-in design for securing an air bag module to a steering wheel.

Fig. 1 is a schematic sectional view of a vehicle steering wheel with a snap-in air bag module; and

Fig. 2 is an enlarged exploded view of a portion of Fig. 1.

A vehicle steering wheel 10 includes a ring-shaped rim portion 12, a centrally located base plate 14, and a plurality of spokes 16 connecting the rim portion to the base plate. The steering wheel 10 includes a plurality of air bag module mounting flanges 18 projecting upward from the base plate 14. Each mounting flange 18 has a radial opening 20 for receiving a pin as described below. A pin mount 22 is located radially outward from each of the mounting flanges 18 and projects upward at an angle from base plate 14. A spring-loaded pin 30 is secured to each of the pin mounts 22 and projects through the opening 20 in a respective one of the mounting flanges 18. Each of the pins 30 has a nose portion 32 with a tapered outer surface 34 and a locking groove 36.

The steering wheel 10 further includes an air bag module 40 comprising an inflatable air bag 42, an inflator 44, an air bag cover 46, and a module housing 48. The housing 48 has axially extending attachment flanges 50. Each of the attachment flanges 50 has an end portion 52 with an angled end surface 54 and a radial slot 56 adjacent the end surface.

The air bag module 40 is snapped-in to the steering wheel 10 by placing the module within the steering wheel so that the angled end surface 54 on each attachment flange 50 engages the tapered outer surface 34 on each of the spring-loaded pins 30. The air bag module 40 is then pushed downward, in the direction of arrow A in Fig. 2, which pushes the pins 30 back into the openings 20, in the direction of arrow B, in the mounting flanges 18 until the slots 56 in the attachment flanges 50 are exposed. The pins 30, under the bias of the springs, then push into the slots 56 in the attachment flanges 50 and the end portion

52 of each attachment flange 50 snaps into the locking groove 36 in the nose portion 32 of each pin. Removal of the air bag module 40 is accomplished by pushing down on the air bag module while simultaneously pulling on a radially outer end 38 of the pins 30 to unseat the flanges 50 from the grooves 36.

The downward angle of the pins 30 provides constant force on the attachment flanges 50 and mounting flanges 18 so that the air bag module 40 does not vibrate. The nose portion 32 of the pins 30 could be coated with plastic or rubber to further reduce the potential for vibration. It is contemplated that the spring-loaded pins 30 could instead be located on the air bag module 40. Further, the above described snap-in design could be applied to other inflatable restraint locations.

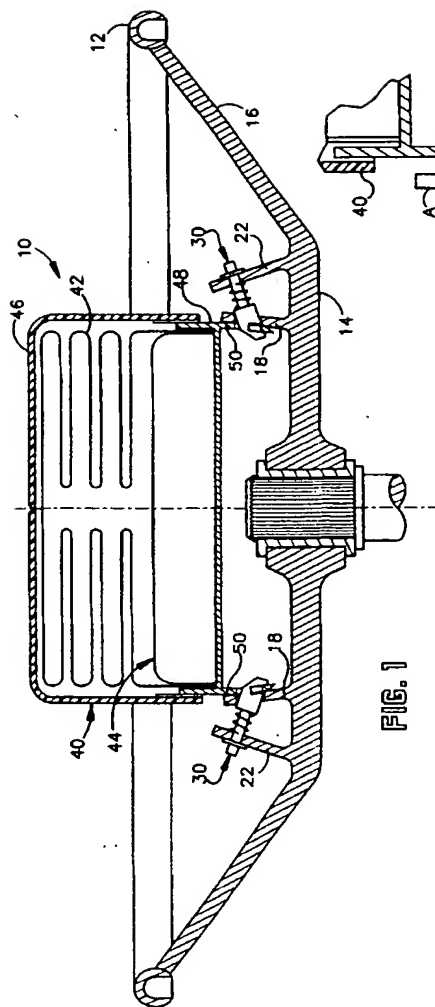


FIG. 1

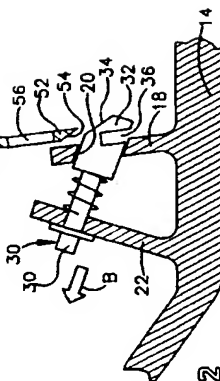


FIG. 2